Functions that differ at a point

Suppose $f(x) = g(x)$ for all $x \neq c$ on an open interval containing c. If $\lim_{x\to c} g(x)$ exists, then $\lim_{x\to c} f(x)$ also exists and

$$\lim_{x\to c} f(x) = \lim_{x\to c} g(x).$$

Squeeze Theorem

Suppose f, g, and h are functions for which

$$g(x) \leq f(x) \leq h(x)$$

for all x in an open interval containing c, except possibly at c. If

$$\lim_{x \to c} g(x) = L \quad \text{and} \quad \lim_{x \to c} h(x) = L,$$

then f must have the same limit at c:

$$\lim_{x \to c} f(x) = L.$$

Common ways to resolve $0/0$ forms

1. Factor and cancel

2. Expand and simplify

3. Multiply by the conjugate and simplify

4. Get a common denominator and add (or subtract)

5. Use $\lim_{x \to 0} \frac{\sin x}{x} = 1$

6. Use the definition of absolute value